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STS Consultants, Ltd.
Solutions through Science & Engineering

July 3, 2001

Ms. Verneta Simon, On-Scene Coordinator
Mr. Fred Micke, On-Scene Coordinator
US Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, Mailcode SE-5J
Chicago, Illinois 60604

RE: Draft Final Closure Report, North Columbus RV3 Site, Illinois Street and Columbus Drive, Chicago, Illinois - STS Project No. 1-24418-XK

Dear Ms. Simon and Mr. Micke:

For your review and comment enclosed is the draft Final Closure Report for the above-referenced site. Enclosed are three copies of the report and figures (Volume 1 of II) and one copy of the attachments (Volume II of II).

Please contact me with any questions or comments.

Is at my desk.
Fred

Regards,

STS CONSULTANTS, LTD.

Richard G. Berggreen, C.P.G.
Principal Geologist

750 Corporate Woods Parkway • Vernon Hills, IL 60061-3153 • (847) 279-2500 • (847) 279-2510 Fax

STS CONSULTANTS

CONSULTING ENGINEERS

Grand Pier Center LLC
Final Closure Report

Volume I of II
Report and Figures

1-24418-XK
July 2, 2001

LINDSAY LIGHT II
NORTH COLUMBUS DRIVE RV3 SITE

FINAL CLOSURE REPORT

Revision Number: 0

Approved By:

Date:

Replaces: New

AFFIDAVIT

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

_____

Richard G. Berggreen, C.P.G.
Principal Geologist

_____

Date

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ATTACHMENTS

1.0 INTRODUCTION

This report describes the removal of thorium-impacted soil from the Lindsay Light II/North Columbus Drive RV3 site. This removal was conducted under the Unilateral Administrative Order (Order) Docket Number V-W-96-C-353 issued June 6, 1996, which covers the Lindsay Light II sites, and the First Amendment to that Order dated March 29, 2000, which applies to the subject site, Lindsay Light II/North Columbus Drive RV3, also identified as Grand Pier Center (Attachment A). Respondents to the Order are River East Chicago LLC/MCL Companies and Kerr-McGee Chemical LLC; Grand Pier Center LLC was added as a Respondent under the First Amendment.

This report was prepared by STS Consultants, Ltd. (STS), Project Coordinator, on behalf of Grand Pier Center LLC, owner and developer of the site. The work was conducted in accordance with the Work Plan for Site Radiation Survey and Excavation Soil Management dated March 20, 2000 (Attachment B) and approved by U.S. Environmental Protection Agency (USEPA) on March 23, 2000.

1.1 Identification of Facility

The subject site is referred to by USEPA as the Lindsay Light II/North Columbus Drive RV3 site. The property, with a street address of 200 East Illinois Street, Chicago, Illinois 60611, occupies the majority of the block bounded by East Grand Avenue on the north, East Illinois Street on the south, Columbus Drive on the east, and St. Clair Street on the west. A portion of the northwest corner of this block is excluded (Figure 1.1).

This closure report requests USEPA concurrence regarding closure of the entire subject site. The site consists of three areas, from west to east, designated Area A, Area B, and Area C. The closure report for Area A was previously submitted November 15, 2000 and approved by USEPA January 3, 2001. That report and approval letter are included as Attachment C.

1.2 Hazardous Substances

Thorium-impacted soil was present at the subject site at levels above background concentrations. The Order specified investigation, clean-up and removal of thorium-impacted soil to total radium (Ra226 plus Ra228) concentrations of background plus 5 picocuries/gram (pCi/g), which is 7.1 pCi/g or lower for the subject site.

Relatively small quantities (less than 150 cubic yards) of petroleum impacted soils were also encountered and removed in the vicinity of underground storage tanks (USTs) encountered during both the construction excavation and remediation excavation activities. Figure 1.2 shows the locations of the USTs encountered on-site in the course of this removal. Several tanks were removed during construction activities prior to the start of this removal. Those locations are also shown on Figure 1.2. The tanks were removed under permit from the Chicago Department of Environment and the State Fire Marshal.

Lindsay Bldg
1911-1936

1.3 Chronological Narrative

The thorium-impacted materials on this site and several vicinity properties have been attributed to historical operations by the Lindsay Light and Chemical Company, formerly located at 161 East Grand Avenue, Chicago, Illinois. Manufacturing operations for gas lantern mantles that involved the processing of thorium-bearing mineral sands and manufacturing of the mantles themselves occurred on properties immediately east and west of the subject site. Those operations occurred at the former Lindsay Light Company facilities during the interval 1916 to 1936, approximately. The activities which resulted in the thorium-impacted material on the subject site are uncertain. Portions of the subject site were also occupied in the past by a varnish factory, a foundry, an electrical substation, and a Chicago police traffic division headquarters. More recently the site was a paved at-grade parking lot.

The subject site is to be developed into a multi-use commercial and residential development. Construction began for the development December 27, 1999.

The proposed development includes a slab-on-grade retail facility occupying the eastern part of the subject site (Area C), one level of basement beneath retail space across the middle of the subject site (Area B), and a slab-on-grade (proposed) high-rise residential tower at the west end of the subject site (Area A). All structures are supported on a caisson foundation system incorporating grade beams beneath the slab-on-grade and around the subject site perimeter.

USEPA representatives conducted a walkover reconnaissance survey of the subject site on February 29, 2000. This survey discovered several areas with gamma readings above background. Construction was halted February 29, 2000, and a site-wide survey on a 5-meter grid was conducted by STS on behalf of the owner, Grand Pier Center LLC, at the request of USEPA (Figure 1.3). Portions of the subject site were obstructed by construction equipment and materials. Those areas were surveyed later by STS as equipment and material was moved in the course of construction. A Work Plan for managing the identified impacted soil was developed by STS on behalf of Grand Pier Center LLC. The Work Plan dated March 20, 2000 was approved by USEPA on March 23, 2000, and is included as Attachment B.

The removal activities began in accordance with the approved Work Plan on April 4, 2000. Construction activities resumed May 2, 2000, in concert with the removal activities. The removal and excavation monitoring was completed November 2, 2000. On May 4, 2001, USEPA advised STS as the Project Coordinator, that no additional removal activities are warranted for Areas B and C. This letter serves as authorization to prepare this final Closure Report, which in accordance with the Order is due 60 days following the date of that letter. This report is due on or before July 3, 2001.

Section 1.0 of this report presents the introduction and general site description including a brief site chronology and identification of the hazardous substances present.

Section 2.0 of this report describes the removal actions and those construction activities which were coordinated with the removal in accordance with the Work Plan.

Section 3.0 of this report describes difficulties encountered and actions taken in response to those difficulties. USEPA concurrence was sought and obtained in response to any changes from the Work Plan procedures

Section 4.0 presents the analytical results. These analyses include both clean soils and soils above the cleanup threshold. The samples from above the cleanup threshold represent analyses of impacted soils to document the level present in the removed soils, soils remaining off-site at the perimeter of the excavation, or samples taken as removal progressed to assess whether the cleanup criteria had been achieved.

Section 5.0 presents the conclusions for this report that the work has been completed in compliance with the Work Plan and Order, and requests USEPA's concurrence and issuance of the completion letter. It is also noted that the completion letter would not apply to the residual impacted areas located off-site in the adjacent right-of-ways, applying only to the subject site, including Areas A, B, and C.

2.0 REMOVAL ACTION

The subject site development consists of three areas, A, B, and C, each area having separate and distinct development activities (Figure 2.1). These distinct development activities in each area resulted in different removal activities due to differences in the construction excavation activities. Area A, farthest west, is proposed to be developed as a high-rise residential tower in a future development phase. No development work has begun on Area A as of the date of this closure report. As a result, Area A was excavated and impacted soil removed independently from construction excavation. Area B, at the center of the subject site, is a mid-rise commercial structure supported on caissons with a one story deep basement, excavated 15 to 17 feet below previous site grade. Area C, at the east end of the subject site, is a mid-rise commercial, parking and hotel structure supported on caissons above a first floor developed as slab-on-grade. An extensive network of trenches was excavated for construction of the grade beams that connect the caissons beneath Area C. A total of 115 caissons were installed across Areas B and C, 57 in Area B and 58 in Area C. An additional 13 caissons were installed along the north and south sides of Illinois Street along the south side of the site to support an elevated roadway viaduct. The following sections describe the activities associated with the removal action in each area.

2.1 Area A

The closure report for Area A was provided separately. The closure report concludes that no known thorium-impacted soil remains in Area A. Approval of the closure report for Area A, dated November 15, 2000 was received January 3, 2001. A copy of that report and the approval letter are included as Attachment C.

2.2 Area B

Development at Area B included a one story deep basement. Removal excavation of the thorium-impacted soil and construction excavation activities included the following:

- Asphalt and concrete pavement had been stripped from the subject site before the thorium impacts were discovered.
- Piers and footings for portions of the overhead Illinois Street viaduct along the south margin of the subject site were removed before the thorium impacts were discovered.
- Test pits were excavated to remove potential obstructions at the locations of the proposed caissons. The majority of the test pits were completed before thorium impacts were discovered on February 29, 2000. The remainder were screened for radiation as they were excavated following resumption of construction activities on May 2, 2000.
- The basement excavation had been initiated before the thorium impacts were discovered on February 29, 2000. That portion of the subject site had been lowered an estimated 3 to 5 feet in places.
- Upon discovery of the thorium impacts by USEPA on February 29, 2000, construction activities were temporarily halted and the site was surveyed by STS on behalf of the owner for elevated gamma radiation on a 5-meter grid. The results of that survey are presented on Figure 1.3.
- Those locations identified as exhibiting elevated gamma readings in the initial 5-meter grid survey were excavated to apparent clean limits. Excavation was conducted with an approximately 1 cubic yard bucket on a track backhoe. Impacted soil excavation in Area B began in the southwest corner and proceeded to the east and north. Other isolated areas were excavated as they were encountered in the course of construction excavation. Verification surveys and sampling were conducted by USEPA in accordance with the Work Plan. Figure 2.2 shows the limits of the remediated areas.
- A total of 57 caissons were drilled in Area B. The caissons ranged in diameter from 3 feet to 8 feet. The caissons were excavated by first driving an exterior temporary casing, and then excavating with a large diameter auger. The fill and uppermost sand underlying the fill were screened for evidence of thorium impacts. Three (3) caissons were identified as exhibiting thorium-impacted soil in Area B. These locations were at grid stations A-4, A-5, and N-5.

- The basement excavation proceeded through the fill soils which were monitored as that area was excavated. The underlying natural sand soil was found to exhibit no thorium-impacts and was not monitored after the survey of the uppermost sand showed no elevated gamma readings.

- The basement excavation required sheet pile excavation support around the perimeter of Area B. That area was monitored as excavation in preparation for sheet pile driving was conducted.

- The basement excavation extended several feet below the water table. This depth of excavation required dewatering of this portion of the site. One test well was installed and the water sampled to determine whether there were any contaminants which might constrain discharge to the Metropolitan Water Reclamation District of Great Chicago (MWRDGC) sewer system. No exceedances of the MWRDGC pollutant concentration limits (Appendix A to the Environmental Remediation Wastewater Ordinance) were found and a permit was issued by MWRDGC for discharge. A copy of the authorization to discharge is included as Attachment D. Chemical analytical results for the water sample are also included. A total of 9 wells were installed for dewatering. As of January 2, 2001, a total of 1,222,000 gallons were measured as having been discharged from the subject site.

- The perimeter of Area B consists of Grand Avenue sidewalk to the north, Illinois Street sidewalk to the south, Area C to the east, and Area A and off-site commercial properties to the west. Excavation and surveying extended to all of these margins. All on-site identified thorium-impacted soil was removed. No known thorium-impacted soil remains on Area B.

- Thorium-impacted soils were encountered on the right-of-ways adjacent to Area B at several locations. The majority of this material was removed. Locations where contamination was present and has been removed and locations with residual contamination remaining on surrounding right-of-way properties are shown on Figure 2.4.

2.3 Area C

Development of Area C includes an at-grade commercial facility, and a mid-rise parking and hotel facility. Removal excavation of the thorium-impacted soils and construction excavation activities included the following:

- Asphalt and concrete pavement had been stripped form Area C before the thorium impacts were discovered.

- Test pits to identify and remove potential subsurface obstructions at caisson locations had been excavated across Area C before thorium impacts were discovered February 29, 2000. Four caissons had also been drilled and poured before the thorium-impacted soils were discovered.

- Upon discovery of the thorium impacts by USEPA February 29, 2000, construction activities were temporarily halted and the site was surveyed for elevated gamma radiation on a 5-meter grid. The results of that survey are presented on Figure 1.3.

- Those locations identified as exhibiting elevated gamma readings in the initial 5-meter grid survey were excavated to apparent clean limits. Impacted soil removal in Area C generally progressed from east to west. However, areas obstructed by construction equipment or materials, or areas where excavation would have interfered with truck traffic for construction or soil removal were scheduled as soon as practical. Verification surveys and sampling were conducted by USEPA in accordance with the Work Plan. Figure 2.2 shows the limits of the remediated areas.

- A total of 58 caissons were drilled in Area C. The fill and uppermost sand underlying the fill were screened for evidence of thorium impacts. Two (2) caissons were identified as exhibiting thorium-impacted soil in Area C. These locations were at grid stations D.5-24 and G.5-27.

- A network of grade beams was excavated across Area C, connecting the caissons and caisson caps (Figure 2.3). The grade beam trenches varied in width from perhaps 8 feet at the bottom to perhaps 20 feet at the top and were on the order of 6 to 7 feet deep. The walls and floors of these trenches were monitored as they were excavated. Thorium-impacted soil encountered was excavated to clean limits. Associated with the grade beam trenching, several areas where elevators and escalators were to be installed had foundation excavations. Those locations were also surveyed as they were excavated, and are shown on Figure 2.3.

- In that Area C is constructed slab-on-grade, there is no basement excavation. Following completion of removal of all identified impacted soil from the 5-meter grid survey, construction of the caissons, and excavation of the grade beams and elevator and escalator pits, USEPA identified four (4) areas in Area C which remained unexcavated. In order to confirm that all thorium-impacted soils had been removed, USEPA requested excavation and surveying of those areas. Those four (4) locations are grids K to M and 19 to 26.5; H.5 to J and 24 to 26.5; A.5 to B.5 and 19 to 26.5; and E to F and 24 to 26 (USEPA correspondence dated September 18, 2000).

- The perimeter of Area C consists of Area B to the west, Grand Avenue sidewalk to the north, Columbus Drive sidewalk to the east, and Illinois Street sidewalk to the south. Excavation and surveying extended to all these margins. All thorium-impacted soil was removed from Area C.

- Thorium-impacted soils were encountered on the right-of-ways adjacent to Area C at several locations. With the exception of the locations noted below the identified impacted materials on the right-of-way were removed.

N15.5 to 18.5	Beneath Illinois Street sidewalk
G.5-27	Beneath Columbus Drive sidewalk

Locations where residual contamination remains below the right-of-way are noted on Figure 2.4.

2.4 Off-Site Thorium-Impacts Beneath Columbus Drive Sidewalk

Thorium-impacted soil was found to extend off-site to the east, beneath the sidewalk along the west side of Columbus Drive. The material, which remained, had a maximum measured value of 4,620 pCi/g, well above the 7.1 pCi/g clean-up criteria. As a result, USEPA requested efforts be made to reduce the potential exposure to tradespersons to levels as low as reasonably achievable (ALARA). Additionally, USEPA requested that a measurement be made of the possible dose to which the public might be exposed through traffic on the sidewalk at present (during construction and impacted soil removal) and in the future should the material remain in place beneath the sidewalk.

The following steps were taken to address this issue.

- A micro R-meter survey was conducted by STS of the length of the Columbus Drive sidewalk. Particular attention was given to the planter boxes where no concrete sidewalk slab was present to provide shielding. No values more than twice background were measured over the sidewalk. Figure 2.6 presents the results of the Columbus Drive sidewalk micro R-meter survey.

- In order to provide shielding for construction tradespersons working in the grade beam trench adjacent to the residual thorium-impacted soil and provide ALARA protection, several types of material were installed to isolate the impacted soil. Polyethylene sheeting was draped over the wall to minimize drying and soil sloughing from the wall to the trench floor. Plywood sheeting was placed over the plastic to hold the plastic in place and prevent soil which might drop from the wall from entering the trench work area. Steel plates, the type used to cover open street trenching, were placed over the plywood to provide shielding of the gamma radiation. Prior to and following placing the steel plates R-meter readings measured the following:

Table 2.4
R-Meter Readings
Grade Beam Trench Wall

	R-Meter Reading	Distance from Wall
Without plywood or steel plates	3,000 μR/hr	On contact with wall
With plywood	230 μR/hr	On contact with plywood
With plywood	80 μR/hr	1 foot from plywood
With Plywood	35 μR/hr	3 feet from plywood
With plywood and steel plates	35 μR/hr	On contact with steel plate
With plywood and steel plates	20 μR/hr	1 foot from steel plates

The shielding provided by the materials installed was judged sufficient by USEPA to allow the construction trades to operate in the grade beam trench.

- The residual off-site impacted soil will be addressed under the Right-of-Way Agreement. The Right-of-Way Agreement is included as Attachment H. A separate Work Plan was prepared and has been approved by USEPA for this off-site work.

2.5 Soil Stockpile

Several soil stockpiles were present on-site in Areas B and C when removal work began. Those stockpiles were surveyed and sampled to evaluate their potential thorium impacts.

Those soil piles were found to be not impacted and were subsequently used for backfill or were removed from the site as non-thorium-impacted soil. Analytical data are included in Attachment E.

2.6 Verification Sampling, USEPA Sign-off

At each location where thorium-impacted soil was encountered an exclusion zone was established. An exclusion zone was a location with demonstrated contamination requiring excavation and removal to below the 7.1 pCi/g cleanup criteria. USEPA signoff is required to document closure of a remediated exclusion zone. These remediated exclusion zones are shown on Figure 2.2.

At each location, verification sampling was performed in accordance with the Work Plan. After analysis at the site field laboratory, those samples were transferred to USEPA for analysis at Argonne National Laboratory. The results of the analysis of those samples at the field laboratory and the USEPA signoff for those exclusion zones are included in Attachment F.

2.7 Quantities of Materials Removed and Disposal Sites

2.7.1 Quantities of Thorium-Impacted Soil and Disposal Site

Containers Shipped	474
Tons Shipped	10,606.4
Material Disposed at	EnviroCare, Clive, Utah

2.7.2 Quantities of Petroleum-Impacted Soil and Disposal Site

Tons Shipped	129.38
Material Disposed at	CID Bio-pile Facility, Calumet City, Illinois

2.8 Underground Storage Tanks Removed

Underground storage tanks (USTs) were removed from six (6) locations at the subject site. These locations are shown on Figure 1.2. The initial construction activities prior to

discovery of thorium-impacted soil included the removal of two (2) tanks from near the northeast corner of the subject site. They were removed in February 2000.

Five (5) other tanks were encountered in the course of the thorium-removal excavation and were removed under permit during the weeks of May 1, May 8 (two tanks), June 5, October 9, 2000. One suspect tank encountered the week of July 17, 2000, was found to be an elevator hydraulic reservoir and mechanical equipment.

The representatives of the State Fire Marshal and the Chicago Department of Environment were present when the tanks were removed.

Discuss long term water data - and criteria

2.9 Air Monitoring

Air monitoring was conducted on a full time basis at the property boundaries. Air samplers were positioned in the middle of the subject site perimeter at the east, west, north, and south sides of the combined Areas B and C. During the initial two (2) months, until May 29, 2000, redundant sampling using both high volume and low volume samplers was conducted. When Area A was excavated beginning the week of May 29, 2000, the redundant air sampling was discontinued and the western sampler was moved to the west end of Area A and two additional sample points were added along the middle of the north and south margins of Area A. Figure 2.5 shows the approximate air sampling locations. Air sampling was discontinued with the concurrence of USEPA on November 1, 2000. Results of the air monitoring are presented in Section 4.2. Laboratory data re presented in Attachment J.

Personal air monitoring was conducted on all personnel working in exclusion zones. These data are presented in Section 4.4. Laboratory results are presented in Attachment L.

None of the analyses, either at the site perimeter or the personal air monitors, indicated air concentrations above the specified health risk criteria.

H_2O sample results

3.0 DIFFICULTIES ENCOUNTERED

3.1 Off-Site Transport of Excavation Spoil Prior to Thorium-Impacted Soil Discovery

Construction initially began at the subject site with the removal of site pavement, excavation of USTs, removal of overhead roadway piers, excavation of caisson test pits, installation of several caissons, and beginning to lower the subject site across Area B. This work was conducted before February 29, 2000, when evidence of thorium-impacted soil was documented at the subject site. In the course of these activities, soil, asphalt, concrete, and fill from around the USTs were removed from the subject site.

Upon documenting that thorium impacts were present, the possibility of off-site transport of impacted soil was recognized. The following steps were taken to address this issue.

- The transporter was requested to identify all locations which had received material from the subject site. A total of 257 loads were reported to have been delivered to five (5) locations. The majority of the soil material was delivered to one facility, Beverly Gravel in Elgin, Illinois. Additionally, the UST contractor who also shipped material from the subject site reported two (2) loads were transported to one site. The number of loads and disposal locations are indicated in Attachment M.

  This information was initially provided to USEPA who subsequently provided it to the Respondents and STS Consultants.

- All disposal sites were notified by USEPA of the potential for having received thorium-impacted soil. All sites were requested to refrain from any further disturbance, mixing, processing, or burial of the material from the subject site.

- STS and USEPA scheduled site visits to all identified locations. Representatives from each disposal site identified, to the extent possible, the locations where the material from the subject site was deposited. Those locations were field screened by USEPA and STS personnel and, where possible, samples were taken.

- Samples were split and analyzed by STS and USEPA.

- The results showed one site, Beverly Gravel, Elgin, Illinois, with measured values above the clean-up criteria for the subject site. The results of the analyses are included as Attachment G.

- A work plan for the investigation of the extent of impacts and the removal of impacted soil at the Beverly Gravel site was prepared by STS on behalf of Grand Pier Center LLC. A report of the implementation of that work plan is provided under separate cover.

3.2 Replicate Sample Analysis, Sample Geometry

The verification closure samples for the subject site were initially analyzed by STS at the field laboratory. That analytical result was used to facilitate prompt closure. The samples were subsequently provided under chain-of-custody documentation to USEPA who had the samples analyzed at Argonne National Laboratory (Argonne).

There is a recognized heterogeneity in the material being analyzed, with relatively small fractions of the sample having potential to result in an exceedance of the closure standard. As a result, there was a concern noted by USEPA that inconsistent results could be measured if samples were split and one portion was analyzed by one laboratory and a separate portion was analyzed at a different laboratory.

20 ml Vial
150 ml container

A second complication was the different sample geometries employed by the two laboratories. The STS field laboratory used a 40 ml polyethylene vial. Argonne used a larger, 250 ml container.

In order to resolve these issues, the following measures were taken.

- A single sample was collected to be analyzed at both laboratories. The sample was comprised of six sub-samples collected in 40 ml vials. Upon analysis by STS, if all six sub-samples were below the clean-up threshold, the USEPA signed off on the closure. The sample was then provided to USEPA who delivered the sample to Argonne where the six sub-samples were composited for analysis in the larger container as a single sample.

As of the date of this report, all samples which passed using the six sub-sample results were also found to pass the closure criteria reported by Argonne on the composited results.

Give DAC & any other criteria

4.0 ANALYTICAL RESULTS

4.1 Soil Sample Analytical Results

The analytical results are included as attachments to this report. The analyses of all soils sampled following mobilization for field work, March 27, 2000, are presented by sample location/site grid designation in Attachment I. These data are also presented by sequential sample number at the end of Attachment I. These results include samples from locations where field readings indicate material is present which may exceed the cleanup criteria (7.1 pCi/g total radium), in order to document the activity present in those soils. Data are also presented from samples taken to document that the soil from locations which have been remediated are below the cleanup criteria, and can be closed by USEPA (clean closure).

The analyses to document the clean closure of locations previously found to exhibit evidence of thorium-impacted soil are presented in Attachment F. USEPA signoff for those locations are also included in Attachment F. Therefore, these locations have been closed by USEPA, no further removal is anticipated, and these locations are eligible for a clean closure determination and issuance of a Certification of Completion regarding the subject site from USEPA.

4.2 Air Monitoring Sample Analytical Results

Analysis of the air monitoring samples are included as Attachment J. These data include the next day analysis and the four day analysis. None of the four day analysis showed an exceedance of the 30% of the Derived Air Concentration (DAC) as the exposure limit for the site perimeter.

Personal air monitoring (PAM) data for both one day and four day analyses are included. No PAM data indicate an exceedance of the allowable exposure limits for this project.

As a result of these analyses, there is no evidence of a release of contamination beyond the site perimeter and no evidence of an exposure exceedance to personnel working on the site.

4.3 Field Survey Results

Field survey results were obtained throughout the progress of the removal activities. These surveys ranged from the initial site walkover survey on the 5 meter grid shown on Figure 1.3, to the surveys of the basement excavations, grade beam trench excavations and caisson excavations as part of the construction. Additionally, locations exhibiting evidence of contamination were surveyed as removed progressed, prior to the USEPA verification surveys and sampling. These survey results are included as Attachment K to this report.

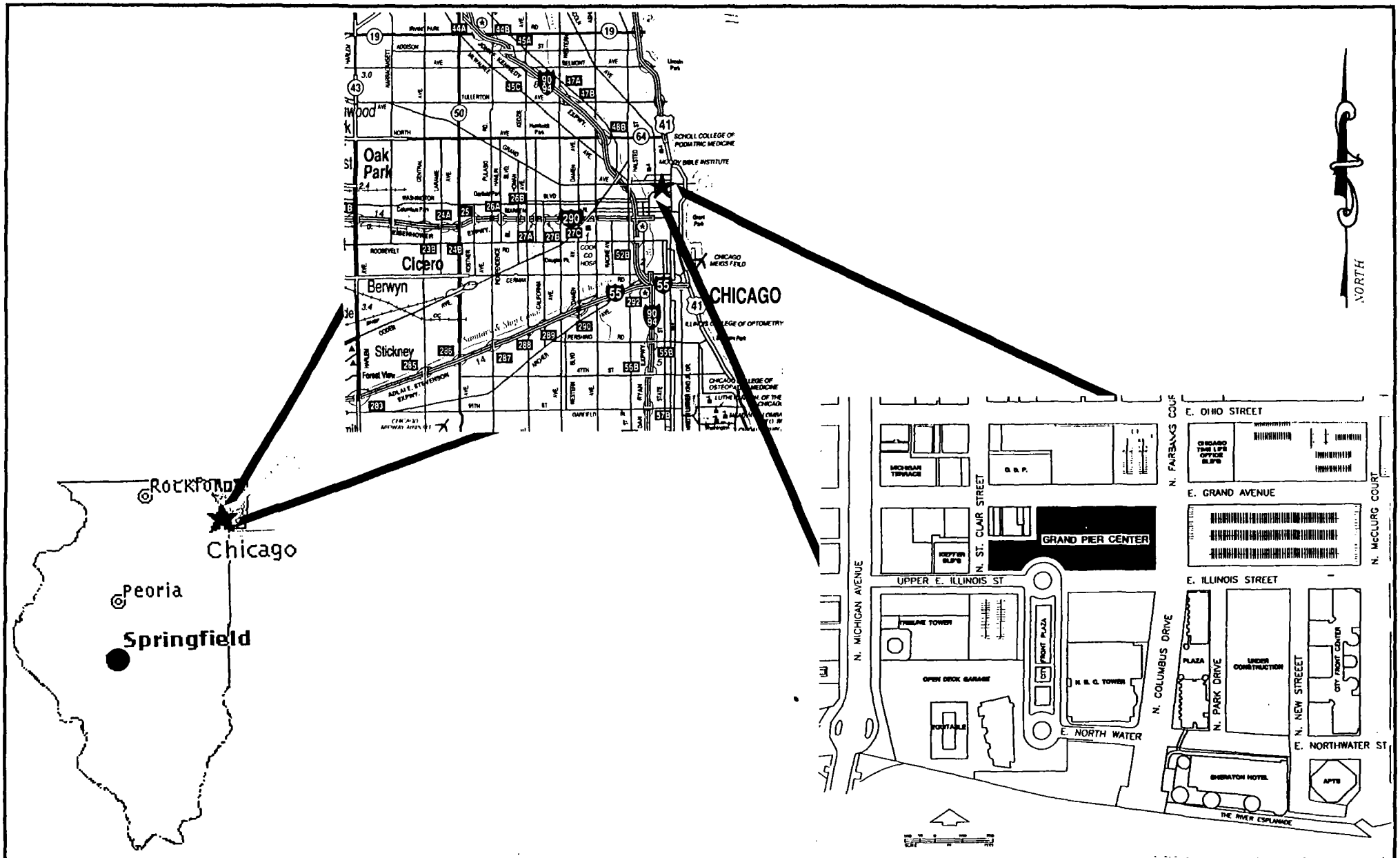
These field survey results, Attachment K, also include results not directly attributed to the site grid. Results from the off-site Illinois Street viaduct caissons screening are included. The survey and wipe data for cleaning equipment used in excavation of contaminated soil are included. The analyses of stockpiles of either overburden excavated from on-site or imported fill are also included in Attachment K.

4.4 Personnel Monitoring

All personnel operating in exclusion zones and other site personnel were monitored with field badges. Attachment L presents the results of the Landauer exposure monitoring reports. None of the personnel monitored under this project experienced a reportable exposure attributed to this project.

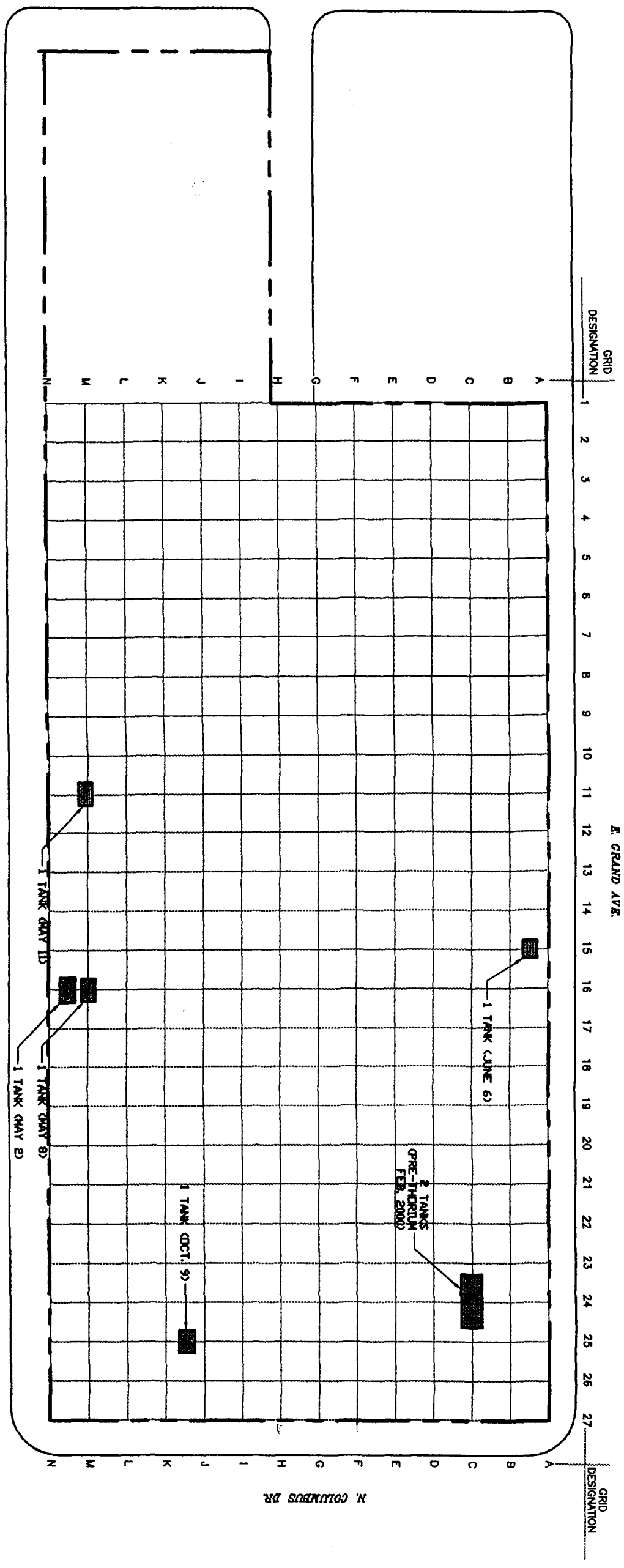
5.0 CONCLUSION

The removal of the thorium impacted soil has been completed at the subject site (Lindsay Light II/North Columbus Drive RV3 site, also known as Grand Pier Center). USEPA verification sign-off has been received for all identified locations which exhibited evidence of contamination. As a result, STS Consultants, Ltd., Project Coordinator for this removal action, on behalf of Grand Pier Center LLC, requests the issuance by USEPA of a clean closure determination and certification of completion in accordance with the Unilateral Administrative Order (Order) Docket Number V-W-96-C-353.



STS Consultants Ltd. Consulting Engineers	SITE LOCATION MAP GRAND PIER CENTER MIXED USE DEVELOPMENT 200 EAST ILLINOIS STREET CHICAGO, ILLINOIS	DRAWN BY KKB	DATE 2-12-01
		CHECKED BY	DATE
		APPROVED BY RGB	DATE 2-12-01
		CADFILE	

STS PROJECT NO. 24418-XK
STS PROJECT FILE
SCALE NTS
FIGURE NO. 1.1



STS PROJECT NO. 24418-XK	STS Consultants Ltd. Consulting Engineers	UNDERGROUND STORAGE TANKS REMOVED GRAND PIER CENTER CHICAGO, IL	DRAWN BY TJC — DATE 2/9/01
STS PROJECT FILE 1.2.dwg			CHECKED BY RGB — DATE 2/9/01
SCALE 1"=50'			APPROVED BY RGB — DATE 2/9/01
FIGURE NO. 1.2			CADFILE X:\PROJECTS\24418\xk\1.2.dwg

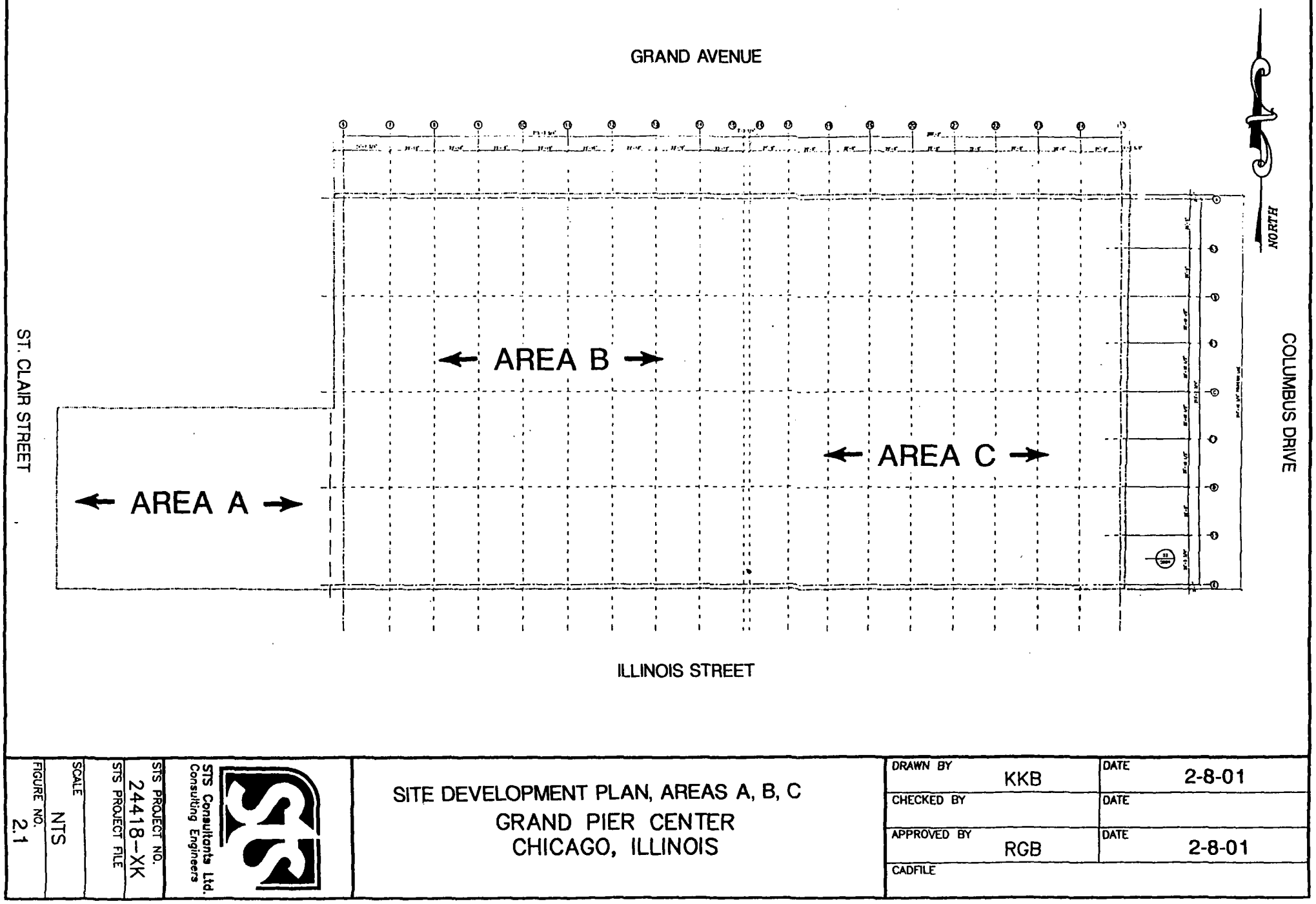
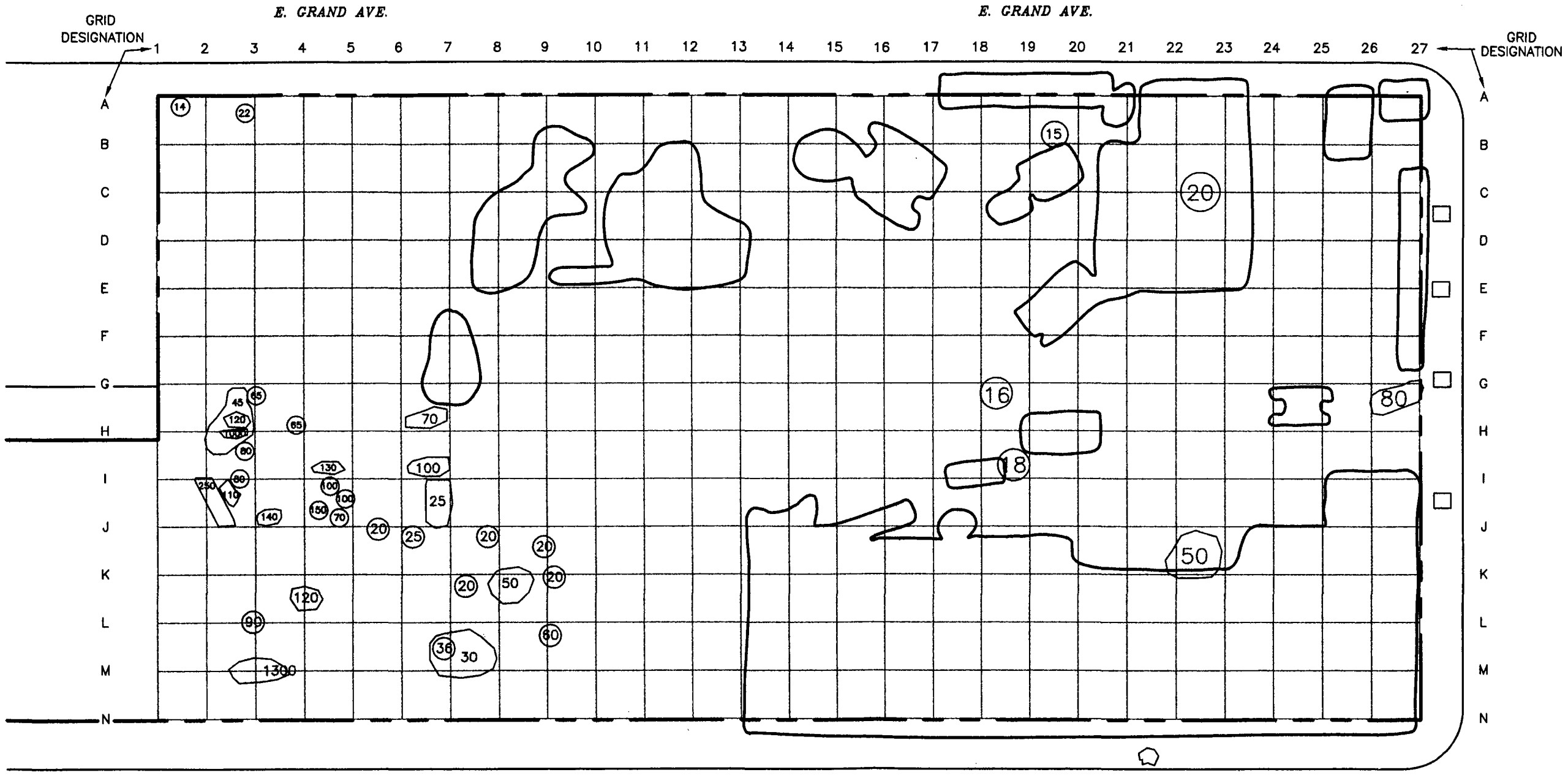


FIGURE NO. 2.1	SCALE NTS	STS PROJECT FILE	STS PROJECT NO. 24418-XK

STS Consultants Ltd.
Consulting Engineers

SITE DEVELOPMENT PLAN, AREAS A, B, C
GRAND PIER CENTER
CHICAGO, ILLINOIS

DRAWN BY	KKB	DATE	2-8-01
CHECKED BY		DATE	
APPROVED BY	RGB	DATE	2-8-01
CADFILE			



LEGEND:

– SAMPLES OF SOIL UNDERLYING SIDEWALK, TOTAL RADIATION pCi/g

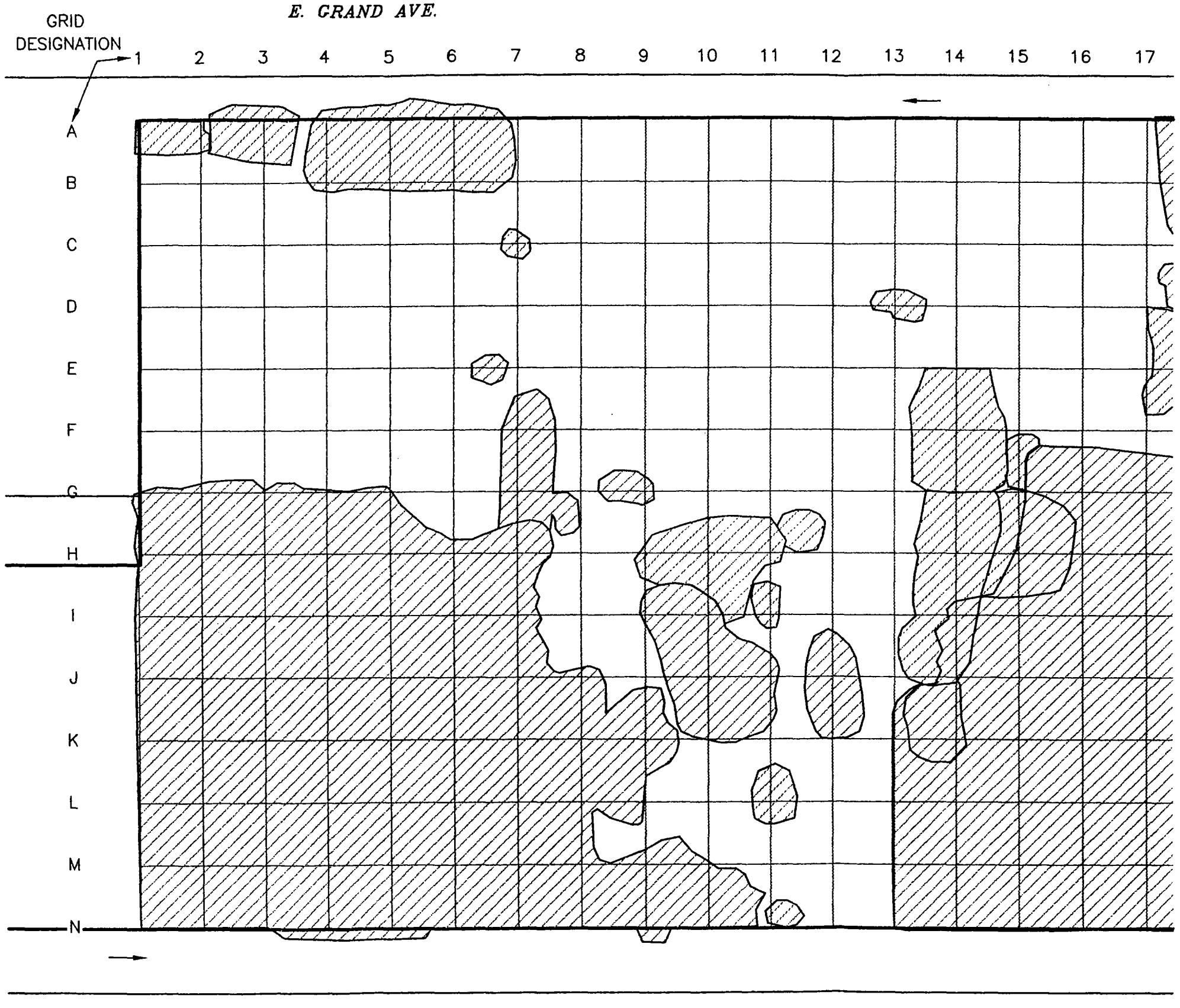
AREAS OF ELEVATED GAMMA RADIATION (μR/hr) FROM INITIAL SITE GRID SURVEY
GRAND PIER CENTER
EAST ILLINOIS STREET
CHICAGO, IL

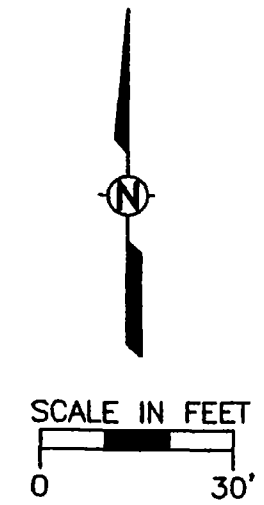
DRAWN BY	TJC	DATE 4/19/01
CHECKED BY	RGB	DATE 4/19/01
APPROVED BY	RGB	DATE 4/19/01

CADFILE A:\FIG2.4B.dwg
04/19/2001 08:36

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	24418–XK
STS PROJECT FILE	FIG2.4B.dwg
SCALE	1"=40'
FIGURE NO.	1.3



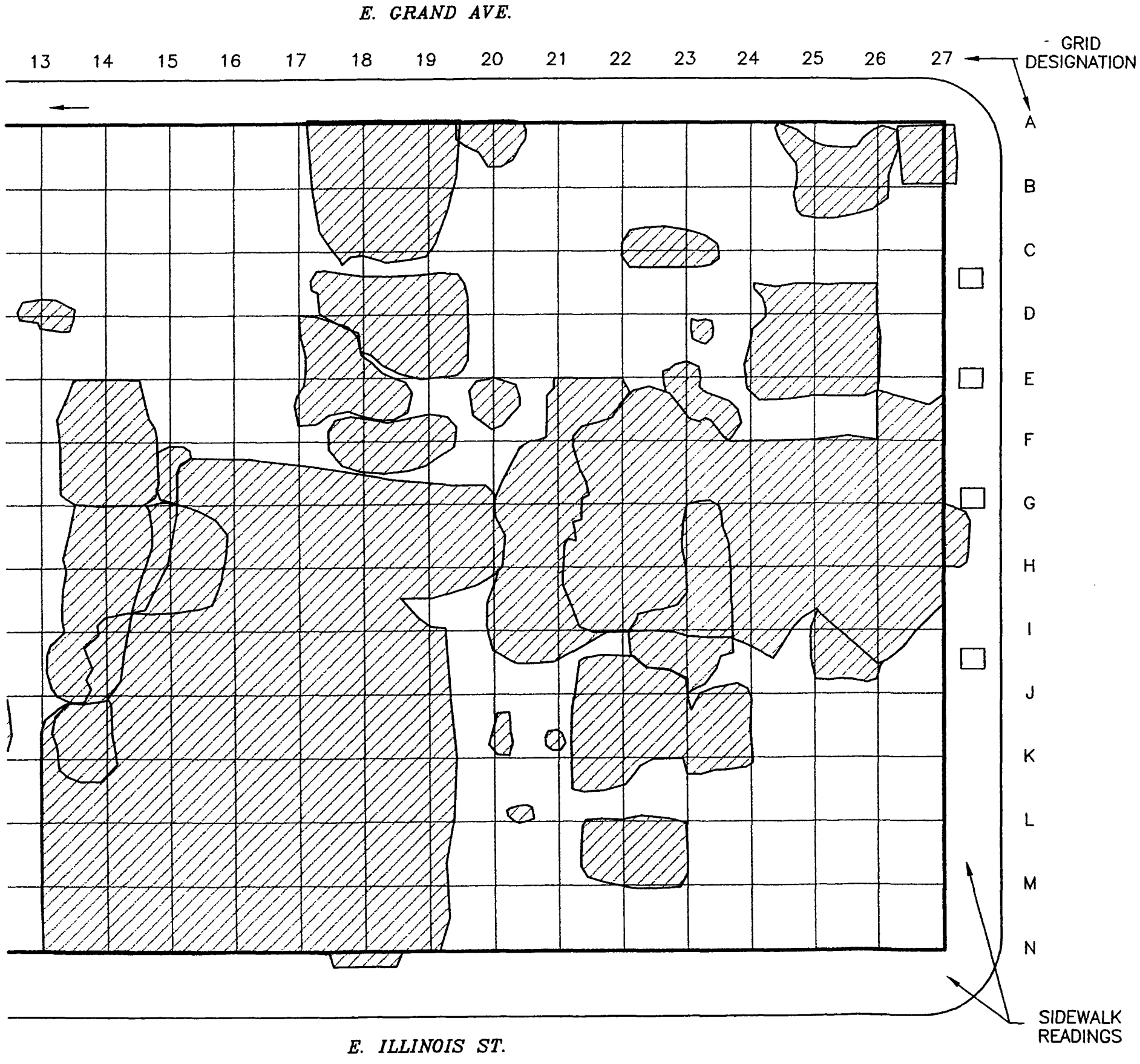


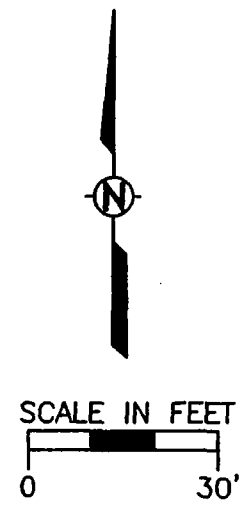
DRAWN BY	AMK	DATE 6/1/00
CHECKED BY	RGB	DATE 6/1/00
APPROVED BY	RGB	DATE 6/1/00
CADFILE	X:\PROJECTS\24418\xk\radiation.dwg	

REMEDIATED EXCLUSION ZONES
GRAND PIER CENTER
EAST ILLINOIS STREET
CHICAGO, ILLINOIS

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	24418-XK
STS PROJECT FILE	radiation.dwg
SCALE	1"=30'
FIGURE NO.	2.2A



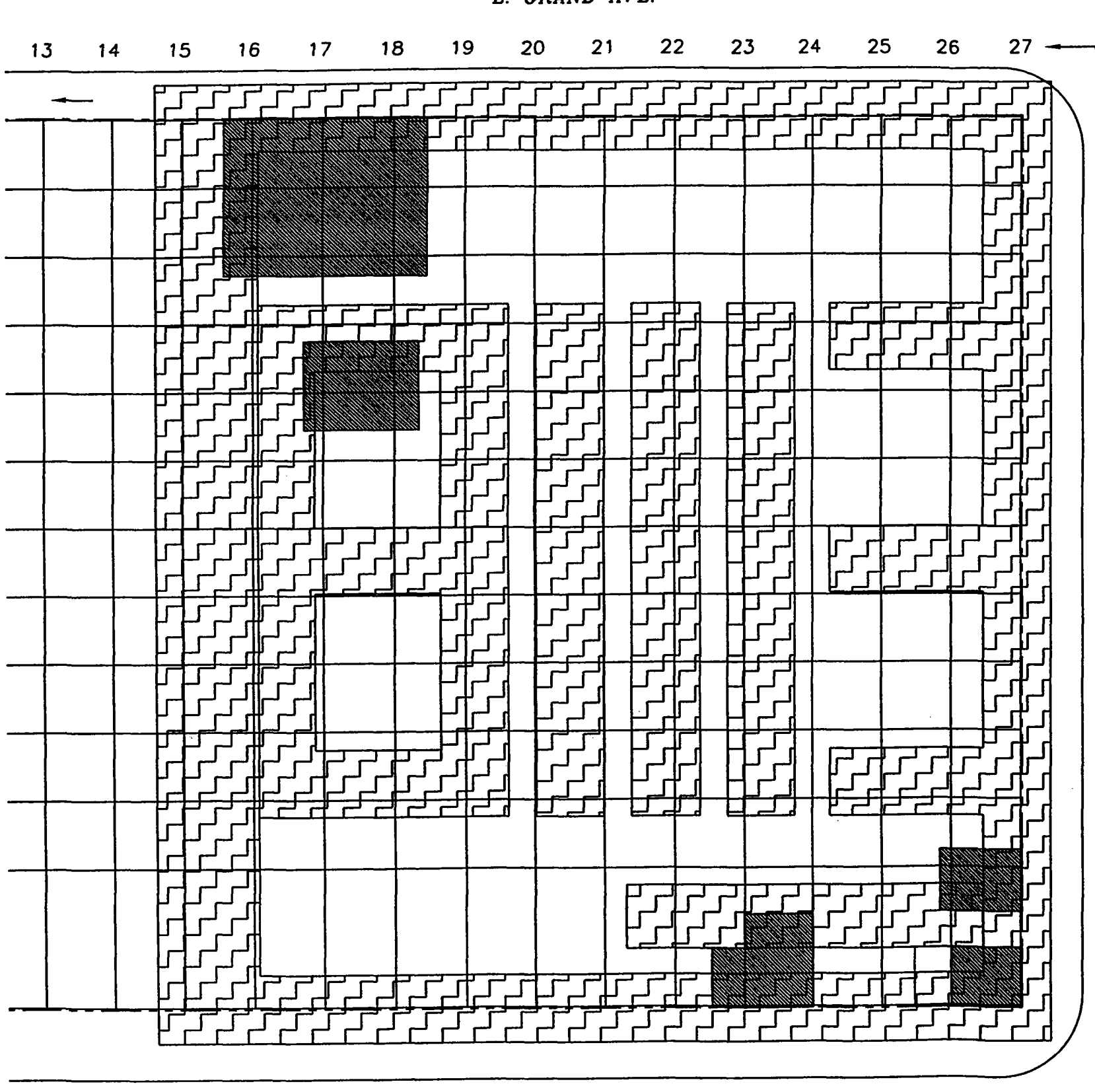


DRAWN BY	AMK	DATE 6/1/00
CHECKED BY	RGB	DATE 6/1/00
APPROVED BY	RGB	DATE 6/1/00
CADFILE	X:\PROJECTS\24418\xk\radiation.dwg	

REMEDIATED EXCLUSION ZONES
GRAND PIER CENTER
EAST ILLINOIS STREET
CHICAGO, ILLINOIS

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	24418-XK
STS PROJECT FILE	radiation.dwg
SCALE	1"=30'
FIGURE NO.	2.2B



SCALE IN FEET

0 30'

LEGEND

EXCAVATION FOR GRADE BEAM

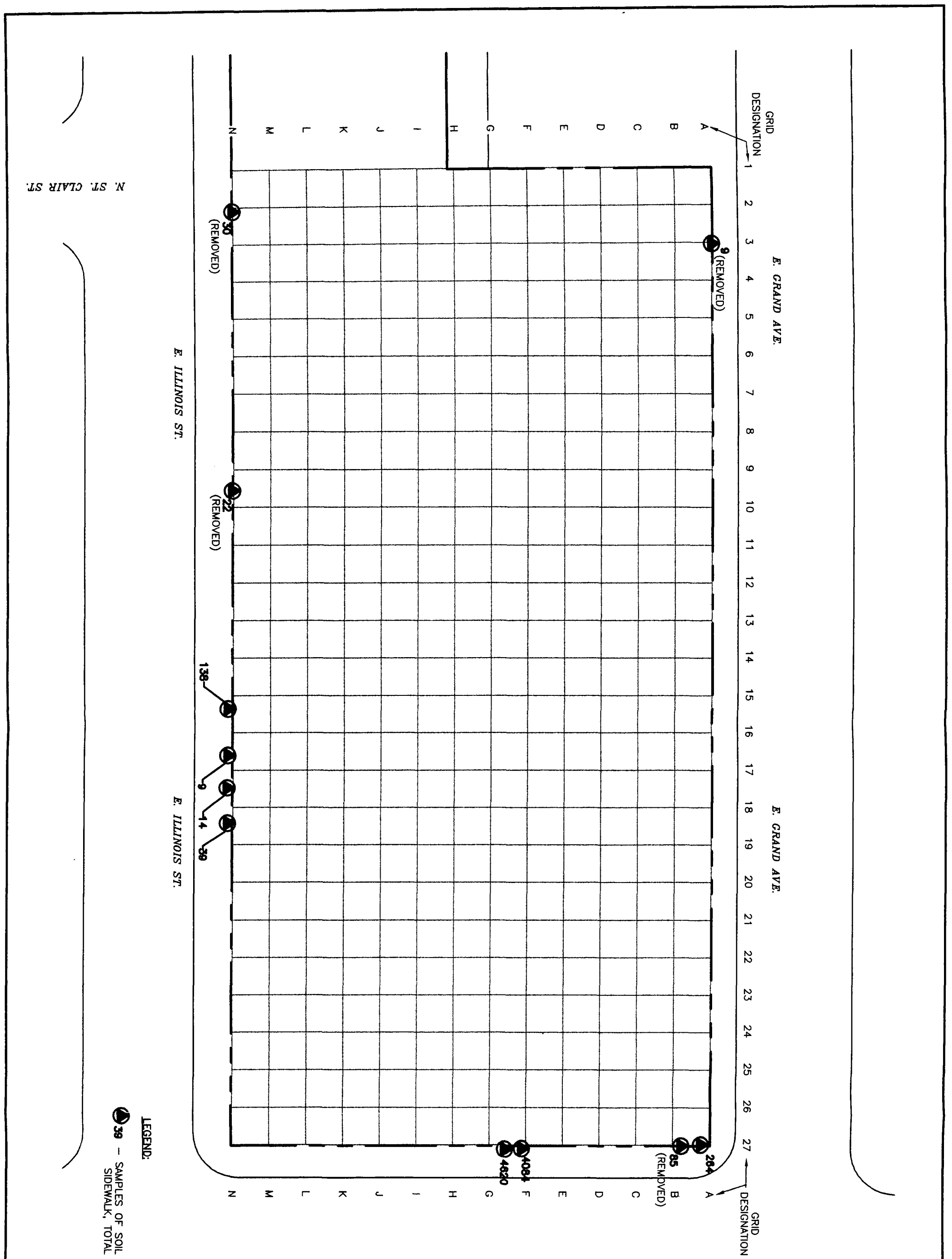
ESCALATOR/ELEVATOR PIT EXCAVATIONS

GRADE BEAM EXCAVATIONS
ELEVATOR AND ESCALATOR PITS
GRAND PIER CENTER
CHICAGO, ILLINOIS

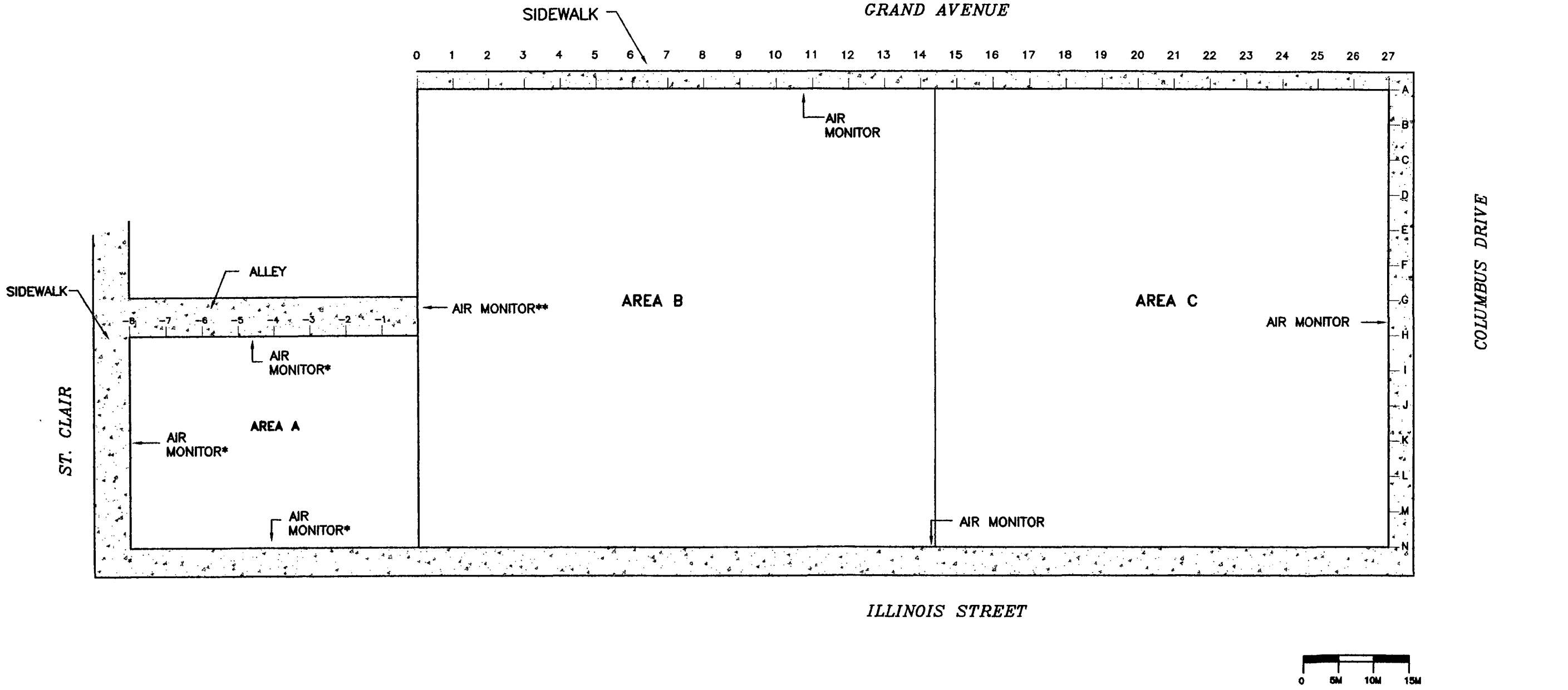
DRAWN BY	AMK	DATE 8/15/00
CHECKED BY	RGB	DATE 8/15/00
APPROVED BY	RGB	DATE 8/15/00
CADFILE	X:\PROJECTS\24418\xk\color.dwg	09/06/2000 09:29

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	24418-XK
STS PROJECT FILE	color.dwg
SCALE	1"=30'
FIGURE NO.	2.3



STS Consultants Ltd. Consulting Engineers	LOCATION OF KNOWN REMOVED & REMAINING OFF-SITE IMPACTED SOIL GRAND PIER CENTER EAST ILLINOIS STREET CHICAGO, IL	DRAWN BY TJC	DATE 4/19/01
		CHECKED BY RGB	DATE 4/19/01
		APPROVED BY RGB	DATE 4/19/01
		CADFILE A:\FIG2.4B.dwg 04/19/2001 08:36	
STS PROJECT NO. 24418-XK			
STS PROJECT FILE FIG2.4B.dwg			
SCALE 1"=40'			
FIGURE NO. 2.4			



NORTH

* AREA A AIR MONITORING
MAY 29 THRU NOVEMBER 2, 2000

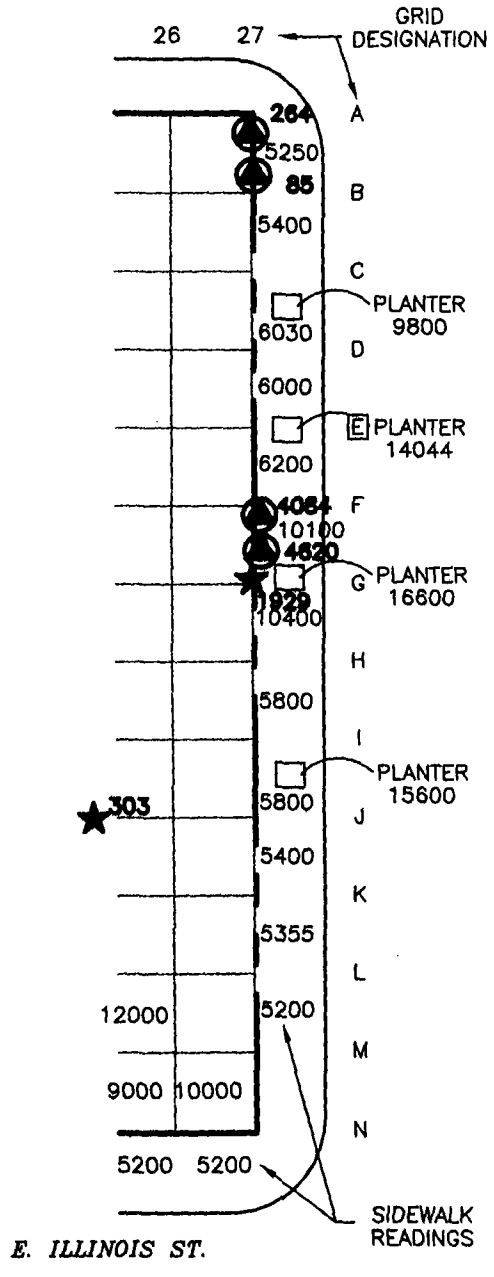
** SUBSEQUENTLY MOVED TO WEST END OF
AREA A THE WEEK OF MAY 29, 2000

DRAWN BY	KKB	DATE 2-8-01
CHECKED BY	DG	DATE 2-8-01
APPROVED BY	RGB	DATE 2-8-01
CADFILE	X:\PROJECTS\24418\xk\AIR-MONITORING.dwg 02/08/2001 15:	

AIR MONITOR LOCATIONS
GRAND PIER
CHICAGO, ILLINOIS

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.	24418-XK
STS PROJECT FILE	AIR-MONITORING.dwg
SCALE	SHOWN
FIGURE NO.	2.5



LEGEND:

39 – SAMPLES OF SOIL UNDERLYING SIDEWALK, TOTAL RADIATION pCi/g

1929 – SELECTED SAMPLES TOTAL RADIUM >200 pCi/g

SIDEWALK RADIATION SURVEY – AREA C
GRAND PIER CENTER
EAST ILLINOIS STREET
CHICAGO, IL

DRAWN BY	TJC	DATE 4/19/01
CHECKED BY	RGB	DATE 4/19/01
APPROVED BY	RGB	DATE 4/19/01
CADFILE	A:\FIG2.4B.dwg 04/19/2001 08:36	

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO.
24418–XK

STS PROJECT FILE
FIG2.4B.dwg

SCALE
1"=40'

FIGURE NO.
2.6